

ABSTRACT OF THE DISCLOSURE

Structurally-stable, tall capacitors having unique three-dimensional architectures for
5 semiconductor devices are disclosed. The capacitors include monolithically-fabricated upright
microstructures, i.e., those having large height/width (H/W) ratios, which are mechanical
reinforcement against shear forces and the like, by a brace layer that transversely extends
between lateral sides of at least two of the free-standing microstructures. The brace layer is
formed as a microbridge type structure spanning between the upper ends of the two or more
10 microstructures.